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USSR MATERIALS AND MATERIALS PROCESSING EQUIPMENT

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I. CHEMICAL INDUSTRY

Regional Roundups

USSR

CONSTRUCTION PROGRAM DEFICIENCIES LISTED -- Moscow, Pravda, 7 Apr 60

Along with successes, there have been serious deficiencies in the USSR capital construction program. The planning organs, sovnarkhozes, ministries, departments, and heads of enterprises in some cases do not provide the construction projects with the necessary funds and materials; they spread out the investments over too many projects at once; and they include in the building plans installations for which the necessary technical documents have not been prepared.

These shortcomings apply particularly to a number of chemical industry projects, where they are especially inadmissible because of the tremendous importance to the national economy of accelerating the development of the chemical industry.

For example, the builders of the Ryazan' Artificial Fibers Plant exceeded the 1959 construction and assembly plan and made all preparations for getting the first stage of the plant into operation in 1959. However, the plant did not go into operation in 1959 because the basic equipment did not arrive until the fourth quarter of 1959 and the remaining equipment will not be in place until 1960.

RSFSR

KRASNOYARSK WOOD CHEMICAL COMPLEX DESCRIBED -- Moscow, Pravda, 12 Apr 60

Motor vehicle tires, cord, and rayon fabrics are among the products which the Krasnoyarsk wood chemical complex will provide for the national economy. Cellulose, needed for the production of viscose, has so far been imported from other economic regions of the USSR, but will soon be produced by the Krasnoyarsk Cellulose-Paper Combine.

This combine is being built on the right-bank [eastern bank of the Yenisey River] outskirts of Krasnoyarsk. Construction of the wood-preparation, cooking, acid, and other shops has been completed and equipment is being tested. The first cellulose is to be produced by the end of April 1960.

Moscow, Pravda, 29 Apr 60

The Krasnoyarsk Cellulose-Paper Combine has put out its first products. Besides viscose cellulose, the combine will produce newsprint, other kinds of paper, and cardboard.

Moscow, Pravda, 12 May 60

The Krasnoyarskpromkhimstroy [Krasnoyarsk Industrial and Chemical Enterprise Construction Trust?] and specialized installation organizations of the Ministry of Construction RSFSR have finished construction and put into operation, in Krasnoyarsk, the cord production facility of the artificial fiber plant, the first stage of the tire plant, and the first stage (with a capacity of 35,000 tons a year) of the cellulose production facility of the cellulose-paper combine. When the cellulose-paper combine goes into operation in 1960, construction of the planned great complex of chemical industry enterprises in Krasnoyarsk will be complete.

Siberian cellulose and hydrolytic alcohol are now the basic raw materials for the Krasnoyarsk synthetic rubber plant, artificial fiber plant, and tire plant.

The artificial fiber plant, the tire plant, and the cellulose-paper combine were designated as "especially important construction projects" by the Council of Ministers USSR. At the three enterprises, 245,000 sq m of production area has been built, and the total cubic content of buildings put into operation is 2 million cu m. Over 270 km of underground technological communications and pipes and 830 km of cable and wiring have been installed.

All buildings and structures of the tire plant, artificial fiber plant, and cellulose-paper combine were constructed of precast reinforced concrete; 52,000 cu m of precast reinforced concrete, including 13,000 cu m of prestressed reinforced concrete, were used.

The enterprises were equipped with the latest technological equipment, providing the possibility for all-round mechanization and automation of production processes and considerably increasing labor productivity. The Krasnoyarsk Heat and Power Plant was expanded to provide the new enterprises with electric power and steam.

Many enterprises of the USSR manufactured and supplied equipment for the Krasnoyarsk chemical industry enterprises. Especially noteworthy were enterprises of the Moscow City and Oblast, Leningradskiy, Kievskiy, and Penzenskiy sovnarkhozes and particularly, the Serpukhov 10 Let Oktyabrya Plant, Moscow Compressor Plant, Kiev Bol'shevik Plant, Penza Chemical Machinery Plant, and others.

The Omsk Tire Plant and the Perm' and Solikamsk cellulose-paper combines extended much aid in getting the tire plant and cellulose facility into operation.

The building and installation personnel are striving to complete construction of the second stage of the tire plant and of the cellulose-paper combine in 1960. By the end of 1960, the cellulose-paper combine is to have the following production capacities: 47,000 tons of cellulose; 31,000 tons of wood pulp; 85,000 tons of paper; and 12,000 tons of cardboard.

Azerbaydzhan SSR

PROJECTS UNDER WAY -- Moscow, Izvestiya, 24 Apr 60

The largest petrochemical combine in the USSR is being constructed in Sumgait. Other construction projects under way in the Azerbaydzhan SSR are a large herbicide installation in Sumgait, an oil extraction plant in Kirovabad, and an alunite mine complex in Zaglika.

Lithuanian SSR

COMBINE UNDER CONSTRUCTION -- Moscow, Izvestiya, 12 Apr 60

The shops of the Kedaynyay Chemical Combine, begun in 1959 and scheduled to begin production in 1961, will cover an area of over 40 hectares on the outskirts of the Lithuanian city. The combine administration building, laboratory, refectory, repair shop (which will have an area of 3,000 sq meters), and one of the production shops are in various stages of completion. The combine will manufacture 14 products for USSR agriculture, including large quantities of mineral fertilizers.

Turkmen SSR

GULF'S RAW MATERIAL POTENTIAL NEGLECTED -- Moscow, Izvestiya, 19 Apr 60

The Kara-Bogaz-Gol Gulf has long been known as a source of practically inexhaustible supplies of bromine and sodium, magnesium, and potassium salts, from which it would be possible to manufacture enormous quantities of sodium, potassium, and magnesium sulfates and chlorides, as well as concentrated potassium fertilizers and magnesia building materials. Some of the initial chemical products could, in turn, serve as raw material for the production of caustic soda, soda ash, sulfuric acid, ammonium sulfate, sodium sulfide, and many other valuable chemical products.

Sodium chloride serves as the starting point for a long line of products, beginning with the production of chlorine and ending with such valuable plastics as polyvinyl chloride and fluoroplastics. An even longer line of important chemical products may be derived from sulfuric acid.

Actually, however, only sodium sulfate and a small amount of magnesium sulfate are being produced at present. And there has been little change, in the last 25 years, either in the quantity of sodium sulfate produced by the Karabogaz Sulfate Combine or in the primitive basin method of production, which involves mostly heavy hand labor.

The Karabogaz Sulfate Combine is an unprofitable enterprise. It suffers losses of 3-5 million rubles every year. And this represents a paradox: the country with the greatest sodium sulfate resources in the world has a shortage of this product!

The primitive technology used by the combine leads to direct wastefulness. Together with the waste brine from which it has extracted sodium sulfate, the combine discards enormous quantities of valuable compounds. Thus, every year, there are irrevocably lost in this manner: 70,000 tons of magnesium sulfate, 250,000 tons of magnesium chloride, up to 750 tons of bromine, 5,500 tons of magnesium concentrate, and hundreds of tons of other salts. The total value of these materials lost as "waste" is according to the All-Union Scientific Research Institute for the Study of Halurgy (VNIIGa), about 45 million rubles or 2.5 times as much as the value of the sodium sulfate produced.

This situation could be remedied by creating all-round brine processing facilities at a capital investment cost of about 28 million rubles, according to VNIIGa, and annual operating costs of 19 million rubles. It is clear, then, that both capital investment and operating costs could be recovered almost in full during the first year of operations.

Only through the installation of new, modern technological processes will it be possible for the Kara-Borgas-Gol Gulf to assume its natural position as a supplier of unlimited amounts of valuable chemical products. Thereby the enterprise would be freed from the influence of natural conditions, such as the frequent sandstorms, which now limit the quality of the sodium sulfate produced, and it would also be able to take advantage of such favorable climatic conditions as the high temperatures and dry atmosphere which prevail there in summer.

Ashkhabad, Turkmenskaya Iskra, 8 Apr 60

The new season for basin method production of sodium sulfate is approaching in the Turkmen SSR. The workers of the Karabogaz Sulfate Combine are exerting all their efforts to complete the preparatory work while at the same time continuing to ship the valuable raw material to chemical enterprises of the country.

Petrochemicals

COUNCIL APPROVES CONSTRUCTION OF COMBINE -- Leningradskaya Pravda, 9 Apr 60

Geodesists have arrived in the outskirts of Sumgait, at a point beyond the Sumgait-chay River. There, on an area of 6 sq km, a petrochemical combine will be created.

The Council of Ministers Azerbaydzhan SSR has confirmed the planned task of constructing this giant enterprise. Capital investment in this construction project will exceed the cost of all existing industry in Sumgait.

The petrochemical combine will produce plastics, artificial fibers, lavsan, fertilizers, and urea. From products made by the combine, artificial fabrics and leather, dishware, carpets, insulation and building materials, and sanitary engineering equipment will be manufactured. The combine will operate on local raw material, natural gas, and condensate.

The first units of the combine will go into operation in 1961 and the first complex of the enterprise by 1965.

Synthetic Rubber

STERLITAMAK PLANT BEGINS OUTPUT -- Moscow, Pravda, 14 Apr 60

With raw material brought in from elsewhere, initial production of synthetic rubber was undertaken on 12 April 1960 at the Sterlitamak Synthetic Rubber Plant in the Bashkirskaya ASSR. Over a period of days, the shops and other buildings composing the first stage of the plant had been brought into operation. Work is proceeding on an experimental shop, where production of the newest kinds of rubber will be mastered.

The plant has a powerful refrigeration system to keep the liquefied gases, which the plant will process, at subzero temperatures.

Moscow, Izvestiya, 14 Apr 60

Indicative of the size of the Sterlitamak Synthetic Rubber Plant is the installation of 575 compressors and pumps; over 13,000 control and measuring instruments; more than 1,6000 columns, reactors, and other items of chemical equipment; 142 units of hoist and transport equipment;

1,035 units of sanitary engineering equipment; and over 35,000 valve fittings in the dozens of buildings and laboratories which make up the first stage of the plant. The total length of all underground, aerial, and intrashop communications exceeds 250 km.

Butane gas was the raw material from which the initial production of synthetic rubber was obtained.

Over 300 construction workers remain to complete the first stage of the plant, while the main body of workers is now working on the second stage. The second stage will occupy an area of 110 hectares and will have buildings 350 meters or more in length. Construction will be in reliable hands; almost all of the workers have either 7-year or 10-year educations.

Rubber Products

HIGH RATING FOR NEW TIRE PLANT -- Moscow, Pravda, 14 Apr 60

The Krasnoyarsk Tire Plant has gone into operation. From the point of view of equipment, process automation, and capacity, the tire plant is one of the best USSR chemical industry enterprises. The tire building shop was equipped entirely with machines made in the USSR.

TESTS CONFIRM NEW TIRE PRODUCTION PROCESS -- Leningradskaya Pravda, 31 Mar 60

To test a set of tires, a ZIL-150 truck recently ran hundreds of kilometers over asphalt, gravel, and bumpy dirt roads. Then the tires were dismounted and sent to the tire institute for examination. It was found that these tires showed 20 percent greater resistance to wear than ordinary tires. These tires had been manufactured with high-frequency current.

Rubber products are usually heated before vulcanization takes place. Since the heating period is rather lengthy, the products lose some of their quality. The Scientific Research Institute of the Tire Industry developed a new method of rapid heating by using high-frequency current. When tires are heated in 3 to 3 1/2 minutes by this method, there is an appreciable improvement in their quality.

SHOE SOLE MATERIAL LASTS LONGER -- Moscow, Moskovskaya Pravda, 8 Apr 60

Among the products of the Kiev Reclaimed Rubber Plant is an unusual shoe sole material. Raw materials for the product are synthetic rubber and plastics, which are obtained from coal tar and gas. Tests have shown that soles made from the new shoe sole material last more than three times as long as soles made from natural leather.

Artificial and Synthetic Fibers

KURSK PLANT TO PRODUCE LAVSAN -- Moscow, Izvestiya, 15 Apr 60

The builders of the Kursk Synthetic Fiber Plant have pledged to get experimental lavsan production under way in April 1960, and to complete construction of the main building by the end of 1960.

FIRST PRODUCTION LINE AT ENGEL'S COMBINE IN OPERATION -- Moscow, Stroitel'naya Gazeta, 22 Apr 60

The first industrial technological capron production line went into operation on 21 April at the combine being built in Engel's for the production of artificial and synthetic fibers. This event marked the beginning of getting another USSR large-scale chemical enterprise into operation.

RYAZAN' PLANT ANNOUNCES FIRST VISCOSE FIBER LINE -- Moscow, Stroitel'naya Gazeta, 1 May 60

On 27 April, 2 months ahead of schedule, a technological line went into operation and produced the first viscose fiber at the Ryazan' Artificial Fiber Plant.

This event was announced to N. S. Khrushchev in a letter from officials of the fibers plant, the builders of the plant, oblast and city party committees, Komsomol committee, and the sovnarkhoz. The letter noted that all of the production buildings and other installations necessary for operating the first stage of the plant had been built.

Thus, there went into operation in Ryazan' a large new enterprise of the USSR chemical industry. The first stage of the Novo-Ryazan' TETs (Heat and Electric Power Station) was built to supply the plant with electric power and steam. More than 370 USSR enterprises took part in producing and supplying equipment for the Ryazan' fiber plant.

The letter states that the builders of the plant have pledged to complete construction of the Ryazan' Artificial Fiber Plant at its full designed capacity in 1960, 3 months ahead of schedule.

Moscow, Pravda, 1 May 60

The main building of the Ryazan' Artificial Fiber Plant contains an area of 76,000 sq m; 11 production shops have been set up in the building and 9,700 units of technological, power, hoisting, transporting, and other equipment have been installed in it.

More than 30,000 cu m of precast reinforced concrete were used to construct the buildings of the plant.

Two turbogenerators with a total capacity of 50,000 kw have gone into operation at the first stage of the Novo-Ryazan' TETs. Water pumping facilities with a capacity of 19,000 cu m per hour have been constructed on the Oka River; a 12-km pipeline and purification facilities have also been constructed. About 110 km of piping was laid and 45 km of access roads were built in connection with the construction of these installations.

Among the 370 suppliers of equipment for the fiber plant were the Leningrad Hoist and Transport Equipment Plant imeni Kirov, the Leningrad Plant imeni Karl Marx, and the Moscow Compressor Plant.

Specialized construction work was done by organizations of the Ministry of Construction RSFSR, the Ministry of Construction of Electric Power Stations USSR, and the Ministry of Transport Construction USSR.

NEW PLANT WILL USE CAPROLACTAM -- Tbilisi, Zarya Vostoka, 27 Apr 60

In the next few years, the production of caprolactam will be undertaken and a synthetic fiber plant will go into operation in Rustavi, Georgian SSR.

Caprolactam will be produced in a group of shops at the Rustavi Nitrogen Fertilizer Plant. Phenol, the principal raw material, will be obtained from a plant in Groznyy. Ammonium and hydrogen are produced by the nitrogen fertilizer plant. The caprolactam will be transported in liquid form through pipes to the adjoining fiber plant.

The caprolactam shops construction site covers 10 hectares, and the synthetic fiber plant will be built on a 30-hectare area.

CAPRON COMBINE UNDER WAY -- Riga, Sovetskaya Latviya, 16 Apr 60

A 34-hectare tract in the northeastern outskirts of Daugavpils, Latvian SSR, has been prepared for construction of the Daugavpils Synthetic Fiber Combine. The stone walls of the plant's buildings are being raised. Construction of the plant is a Komsomol project. Near the plant site, a new city is under development; the plant's thousands of workers and employees will be its inhabitants. The plant will produce capron and the cord fabric, which is needed for motor vehicle tire manufacture.

Plastics

NEW ANTICORROSION, BINDING MATERIALS DEVELOPED -- Alma-Ata, Narodnoye Khozyaystvo Kazakhstana, No 1, Jan 60, p 91

A new anticorrosion material for underground pipelines has been developed jointly by the Institute of Chemical Sciences of the Academy of Sciences Kazakh SSR, the Novosibirsk Plastics Plant, and the Institute of Petroleum of the Academy of Sciences Kazakh SSR.

The new insulation material is produced from polyvinyl chloride resin, a product made of gases resulting from petroleum refining. The resin is mixed in a special installation with plasticizers and a stabilizer to impart plasticity to the material; thereupon, the material is pressed and calendered to the desired 0.5-mm thickness and the desired width, and is then rolled up in the form of a belt or tape. A special glue is used to attach the insulation material to the pipe.

Thus far, asphalt has been used as an anticorrosion pipe coating material. However, the application of asphalt is costly, laborious, and even dangerous; the process requires a large amount of asphalt and, since it is applied hot, the workers must be provided with a boiler to keep the asphalt in liquid form. Also, even if several coats of asphalt are applied, the asphalt coating breaks down in 5-8 years; the pipe begins to rust and eventually requires replacement. The state now expends many millions of rubles for pipeline repairs. The new insulation method requires a relatively small amount of material, which is applied to the pipe without any heat whatsoever and which will last 15-20 years.

The plastic insulation tape was used for the first time to wrap pipe laid in several sections of the Gur'yev-Orsk oil pipeline. Observations have indicated a high degree of effectiveness against corrosion, and use of the new insulation material in place of asphalt coatings is recommended by the Institute of Chemical Sciences.

The Plastics Laboratory of the Institute of Chemical Sciences Kazakh SSR has also discovered an interesting method of producing plastics. An oil refining by-product produced in large quantities is the so-called tarry residue. Even though some of the tarry residue is used to produce various kinds of asphalts and as fuel, huge quantities of this by-product accumulate at the oil refineries.

Laboratory personnel have developed a method of obtaining from the petroleum residue binding materials for the production of various kinds of plastics. According to this method, the semiliquid tarry residue is heated to 270 degrees; then air is blown through it with the aid of a special apparatus. As a result of oxidation which takes place in the

tarry liquid, components of this raw material thicken and the result is a high molecular product which on cooling becomes a hard mass. The softening temperature of this product, that is, the temperature at which it changes from a hard to a semiliquid state, is 120-130 degrees. This kind of binding material is produced by the Orsk Oil Refinery.

Mixing the binding material just described with mineral and fiber fillers and pressing the mixture results in a plastic which, according to tests made jointly with the Moscow Plastics Institute, is fully suitable for the production of battery cases. The Podol'sk Battery Plant has produced the first batteries from the new plastic, and the batteries are now being tested in motor vehicles in various parts of the country.

Tests of the binding material made at the Chekhov Reclaimed Rubber Plant of the Moscow Oblast Sovnarkhoz indicated that it was suitable also as a component for production of waterproof roofing materials and asphalt-rubber linoleums.

The laboratory is now proceeding, on the basis of the binding materials it has produced, to develop methods for producing foam plastics useful as building materials.

PLANT PRODUCES NEW PLASTIC PRODUCTS -- Kishinev, Sovetskaya Moldaviya, 2 Apr 60

Unusual tiles for facing the walls of kitchens and bathrooms have appeared in the stores of the Moldavian SSR. Made in various colors, shiny, and almost weightless, they are also sturdy and low in price. The tiles are made from a synthetic substance in a new plastics products shop at the Strasheny Construction Materials Plant.

The shops will produce also other building materials from polystyrene, capron, and polyethylene. The first door knobs have already been produced. Production of water faucets and window latches is being mastered, and output of sanitary engineering products and furniture accessories is being planned.

The enterprise will produce many other products, including dishes and containers for serving jams and jellies from crystal-clear polystyrene, and combs, clothespins, and even beach shoes from colored polyethylene.

The plastics products shop has been fitted out with the latest equipment. It will be housed in a new building before the end of 1960.

PLASTICS FROM SHALE RAW MATERIALS GIVEN HIGH RATING -- Tallin, Sovetskaya Estoniya, 2 Apr 60

The Institute of Chemistry, Academy of Sciences Estonian SSR, is conducting experiments at the Kiviyli Chemical Combine to obtain dibasic acids from shale. These acids are being produced from a concentrate of an organic substance in shale. The technological process differs considerably from the thermal shale processing method.

Dibasic acids are a valuable raw material. They represent a starting substance for obtaining plastics and artificial fibers. Specialists of the Moscow Plastics Institute gave a high rating to plastics made from shale-derived dibasic acids. The plastics possess good thermal qualities.

The Seven-Year Plan provides for construction of a shop at the Kiviyli Chemical Combine for the production of dibasic acids from shale.

GREATER FURFURAL OUTPUT TO INCREASE PLASTICS PRODUCTION -- Tashkent, Pravda Vostoka, 20 Mar 60

Specialists of the Fergana Hydrolysis Plant and scientists of the plant's polymer laboratory, which is a branch of the All-Union Scientific Research Institute of Plastic Materials, have developed technology for obtaining from furfural dozens of organic compounds for the production of heat-resistant plastics, long-lasting anticorrosion coatings, and artificial resins.

Actual capacity of the furfural shop has become almost ten times the planned capacity and furfural cost has been reduced 20 percent. This has been a result of the introduction of new equipment and technology developed by the Fergana specialists.

Increasing output of furfural has provided the possibility of developing industrial technology for the production of additional synthetic products, including heat-resistant varnishes.

Mineral Fertilizers

LONG-LASTING FERTILIZER DEVELOPED -- Vienna, Osthandel, No 3, Mar 60

A concentrated nitrogen fertilizer effective for several years has been developed by the Research Institute for Fertilizers and Agricultural Soils (Agroboden) in the USSR. It is based on the polymerization of ureas and formaldehyde and contains up to 40 percent nitrogen. At the time of initial application, only about 2 percent of the nitrogen is released by

water action and the rest dissolves gradually. Fertilization with urea-formaldehyde results in increased yields for 2-3 years, even on light soils from which water-soluble nitrogen compounds are usually leached very easily. Favorable results have been obtained in connection with wheat, oats, grasses, and other plants.

ADVANTAGES OF APATITE OVER PHOSPHATE ROCK -- Vienna, Osthandel, No 4/5, Apr-May 60

The most important apatite deposits of the USSR are on the Kola Peninsula. The concentrate obtained from the crude ore is used in the production of many fertilizers, such as superphosphate, double superphosphate, calcined phosphate, ammonium phosphate, calcium phosphate, etc.

Soviet apatite concentrate contains 84-86 percent $Ca_3(PO_4)_2$ and 1-3 percent H_2O.

Apatite concentrate has the following advantages over phosphate rock:

1. About 10-35 percent sulfuric acid per unit of phosphoric anhydride is saved in the production of ordinary superphosphate from apatite concentrate, as compared with the processing of phosphate rock.

2. More than 374 kg of phosphoric anhydride is produced from a ton of apatite concentrate, as compared with about 340 kg of phosphoric anhydride from a ton of phosphate rock.

3. Calcined phosphate produced from apatite concentrate contains about 30-32 percent phosphoric anhydride in the finished product.

4. Apatite concentrate is the better raw material for production of concentrated phosphoric acid in the sulfuric acid process. The concentrated phosphoric acid so produced contains only small amounts of impurities. When the phosphoric acid is used to produce double superphosphate or ammonium phosphate, the fertilizer contains 48-52 percent phosphoric anhydride. Apatite concentrate may be used equally successfully for the production of phosphorous or phosphorus-nitrogen fertilizer.

The data above have been extracted [by Osthandel] from Leitfaden fuer Importe aus der UdSSR (Guide for Imports From the USSR), Deutscher Wirtschaftsdienst (German Economic Service) GmbH, Cologne, 160 pp, DM 6.80.

Carbon Black

PLANT EXPERIMENTS WITH REFINERY BY-PRODUCTS -- Moscow, Sovetskaya Rossiya, 1 Apr 60

The Izhma Carbon Black Plant, Komi ASSR, produces carbon black from natural gas. However, experiments are being conducted to make use of oil refinery by-products for carbon black production. For example, two furnaces are being used for experimental output of carbon black from a mixture of gas and mazut. Results have been favorable, and soon all 14 furnaces will operate on this raw material.

Chemical Equipment

INSTITUTE NEEDS SPECIALISTS -- Alma-Ata, Kazakhstanskaya Pravda, 26 Dec 59

The Kazgiprokhimmash [Kazakh State Institute for Planning Chemical Machine Building Plants?] is advertising for qualified engineers, designers, and technicians. Applicants are urged to write to Alma-Ata, [ulitsa] Kalinina, 158.

UNEDUCATED "SPECIALISTS" AT DNEPROPETROVSK PLANT -- Kiev, Pravda Ukrainy, 14 Jan 60

The Dnepropetrovsk Motor Vehicle Aggregate Plant has fulfilled its 1959 plan for the production of chemical equipment only 68 percent. A contributing factor to the nonfulfillment is that 130 engineering and technical positions at the plant are occupied by individuals with only an 8-7 and even 4-year elementary education. For example, a former agriculturist has a position as design-engineer, a former livestock expert has a job as a designer at the technical division of the plant, and a former feldsher works as an engineer-technologist.

NEW POWERFUL NITROGEN COMPRESSOR DESIGNED -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 24 Feb 60

The Penza Compressor Plant has made a powerful ZG-220/13 compressor designed for the delivery of 13,200 cu m of nitrogen gas per hour into the manufacturing system of chemical plants. It will replace 2-3 medium-capacity compressors.

PLANTS TO PRODUCE EQUIPMENT AND COMPRESSORS -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 16 Mar 60

The enterprises of Lipetsk, Yelets, Lebedyan', and Chaplygin will produce improved models of tractors, high-precision surface-grinding machines, piston and centrifugal compressors for the chemical industry, and instruments for foundry production.

These plants will be equipped with 30 mechanized and automatic lines, 175 special and unit-type machine tools, and 42 automatic machine tools.

EXPANSION AND REMODELING OF ODESSA PLANTS -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 23 Mar 60

The Odessa Avtogenmash Plant has specialized in the production of industrial oxygen- and nitrogen-making installations, as well as various automatic equipment for gas-flame processing of metal.

In 1959, the plant put into operation a group of machiner shops with a total floor area of 10,000 sq m.

Construction of two more, even larger, production buildings will be completed in 1960.

The Odessa Refrigeration Machinery Plant, specializing in the Production of industrial refrigeration installations and air-conditioning equipment, is being radically remodeled.

SVERDLOVSK PLANT PRODUCES OXYGEN EQUIPMENT -- Vil'nyus, Sovetskaya Litva, 23 Mar 60

The Shyaulyay Bicycle Plant has put in operation a new oxygen station. Equipment for the station was produced by the Sverdlovsk Oxygen Plant.

CLAY PUMPS PRODUCED BY CERAMIC INSULATORS COMBINE -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 30 Mar 60

The Slavyansk Ceramic Insulators Combine has made new corrosion-resistant pumps for acids. All parts of these pumps, with the exception of electric motors and ball bearings, are made of clay. They have a service life ten times as long as the conventional pumps, and cost only as much to produce.

NEW PLANT PRODUCES CHEMICAL MACHINERY -- Leningradskaya Pravda, 13 Apr 60

The Pskov Machine Building Plant is currently under construction, but it is already producing machinery for the manufacture of chemical fibers.

N. P. Solnyshkin, the plant's chief engineer, has stated that the plant has the capability of utilizing tens of thousands of square meters of its floor space for the production of machinery.

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II. OIL AND GAS INDUSTRIES

Production

PROJECTED PLANS FOR USSR OIL, GAS INDUSTRIES INDICATE FASTER GROWTH IN 1960 -- Moscow, Neftyanoye Khozyaystvo, No 1, Jan 60, pp 1-12

Since 1946, the USSR has been catching up rapidly with the US in oil production. Although the US still leads the USSR in output, the USSR has narrowed the production gap between the two countries from an 11:1 ratio in 1946 to a 2.7:1 ratio in 1959. In 1955, the US was ahead by a 5:1 ratio.

During 1956-1959, the annual output of the USSR increased more than 58 million tons, whereas that of the US remained virtually unchanged. In 1958, the USSR accounted for about 60 percent of the increase in oil production throughout the world.

In 1959, the USSR produced more than 129 million tons of crude oil, about 1.5 million tons more than planned and about 16 million tons more than it produced in 1958. The goal for 1960 has been set at 144 million tons, 11.2 percent more than the 1959 output.

Drilling has been much more effective in the USSR than in the US. During 1956-1958, the USSR extracted 18 tons of crude oil for each meter drilled, as against the US output of only 6 tons per meter of drilling.

The 1960 oil production goal of the USSR is in line with the control figures set by the Seven-Year Plan, but original targets for some union republics have been scaled down because of oil field development conditions. For example, the Seven-Year Plan set a target figure of 608,000 tons for Kirgizia, but this figure has since been lowered to 448,000 tons because the republic's Izbaskent Oil Field started to flood rapidly. The difference of 160,000 tons is to be made up by increasing production somewhat over the figures set originally by the Seven-Year Plan for the RSFSR, Uzbekistan, and Kazakhstan.

Under the new schedule, 1960 production is to be distributed as follows (in million tons):

RSFSR	Over 115.00
Azerbaydzhan	17.76
Turkmenistan	4.95

Ukraine	2.10
Kazakhstan	1.60
Uzbekistan	1.58

Under the new schedule, the RSFSR is expected to supply 80.21 percent of the USSR 1960 oil production, as against 97.29 percent in 1959, and the Ukraine is to supply 1.46 percent, as against 1.26 percent in 1959. The other republics will produce somewhat smaller percentages of the USSR output in 1960 than in 1959.

A total of 70.7 percent of the USSR production is expected to come from the European USSR areas (excluding the Ural Mountain region), as against 70.3 percent in 1959 and 69.8 percent in 1958.

The planned output of 144 million tons is expected to meet completely the demands of the Soviet economy for crude oil and petroleum products, as well as the Soviet Union's other requirements for these commodities.

[Note: The other requirements may mean shipments, possibly even larger than before, of crude oil and petroleum products abroad. Oil is being exported to several countries of the Free World, including some in Latin America, the latest of which is Cuba.]

An 11.2-percent increase in crude oil production is expected in 1960 with only a 2-percent increase in development drilling over the 1959 level. The Seven-Year Plan originally set the development drilling goal for 1960 at 3,727,000 meters, but this figure has since been reduced to 3,516,000 meters. The new figure compares with 3,442,000 meters of drilling in 1959.

Water flood projects are scheduled to produce 68 percent of the 1960 crude oil, with water injection slated to rise to 202 million cu m from the 163 million cu m injected in 1959.

Up to 3,000 fracturing jobs are scheduled on the oil wells in 1960. Some 1,050-1,100 oil wells are to be equipped with electric pumps, 100 wells with hydraulic piston pumps, and 3,500 wells with automatic and remote control equipment. Oil desalting and stabilizing units are scheduled for construction at the fields, and crude oil desalting and dehydration at the fields is scheduled to increase to 12 million tons, from 6 million tons in 1959.

In 1960, ten percent more crude oil is to be refined than in 1959. The output of light products is scheduled to increase 9 percent; lube oils, 10 percent; fuel oil, 11 percent; diesel fuel and diesel oil, 15 percent; and motor gasoline, 8 percent. Output of tractor kerosene is to be 35 percent lower than in 1959 because of declining demands for this product. The growth planned for refining in the RSFSR, the Ukraine, and Uzbekistan is higher than the average planned for the Soviet Union generally. There is to be considerably more refining of crude oil also in Azerbaydzhan, but only insignificant increases in refining are planned for Georgia, Kazakhstan, and Turkmenistan.

The 1960 schedule calls for an increase in primary distillation capacity. The lag in oil refinery construction during recent years has created a gap between the growth in oil production and the growth in refining capacity. The disparity between the two must be overcome. New catalytic reforming hydrofining, carbamide dewaxing, and other types of units are to be placed on stream in 1960. Considerably more capacity is also planned for the selective refining of lube oils.

The demand for diesel fuel has been sharply outstripping the demand for motor gasoline; hence, some motor gasoline must be used in diesel fuel to produce an off-standard diesel fuel. Measures are being developed to increase the output of diesel fuel in 1960 through a reduction in the output of motor gasoline. It has also been proposed that motor gasoline consumption be increased by using diesel fuel of a wider fraction in existing motor vehicles and tractors, and by using a blend of motor gasoline and diesel fuel in a number of diesel engines.

The 1960 schedule calls for the extraction of 53.2 billion cu m of gas, nearly 40 percent more than in 1959, and some 15.4 percent more capital is to be invested for the expansion of the gas industry.

As previously, most of the 1960 gas output is scheduled to come from the RSFSR and the Ukraine. The USSR expects its commercial gas reserves to increase 396 billion cu m, as against increases of 501 billion cu m in 1959 and 316.9 billion cu m in 1958. Initially, gas reserves in 1959 were to have increased 359 billion cu m, but this figure was exceeded because the exploration of the Gazli field in Uzbekistan was completed ahead of schedule and because the reserves found during the exploration of the Shebelinka field in the Ukraine were larger than anticipated.

During 1960, the Soviet Union plans to drill 605 exploratory gas wells totaling 1,295,000 meters. Its commercial gas reserves are expected to increase to 1.81 trillion cu m by the end of the year, as against its reserves of 988 billion cu m at the end of 1958 and 588 billion cu m at the end of 1956.

The 1960 schedule for the construction of gas fields and major gas lines and for the expansion of gasification in the USSR is in line with the control figures set by the Seven-Year Plan.

The 1960 gas extraction goal is based on the expectation that all the electric-drive and gas-drive turbine equipment already assembled at the compressor stations or scheduled for delivery, assembly, and operation in 1960 will operate continuously, and also that the major gas lines will operate at full capacity.

The shortage of equipment, particularly compressor units for the compressor stations along the major gas lines, has been the main reason for the failure of the gas industry to expand more than it has during the years through 1959.

Along with building new gas fields and building up the existing gas fields, in 1960 the USSR plans to build natural gasoline plants in Karadag and Siazan', Azerbaydzhan; in Minnibayevo, Tatarskaya ASSR; in Mukhanovo, Kuybyshevskaya Oblast; in Shkapovo, Bashkirskaya ASSR; and in Dolina, Ukraine.

The 1960 oil and gas drilling schedule calls for a total of 8,356,000 meters of holes, i. e., 613,000 meters of 8 percent more than drilled in 1959. Exploration drilling is to account for 4,608,000 meters of the total, an increase from the 4,094,000 meters of exploration drilling in 1959, when it surpassed development drilling for the first time. For each meter of development well, 1.23 meters of exploratory well is to be drilled.

Some 2,805,000 meters of the 1960 oil and gas drilling is to be of the slim-hole category, or 33.6 percent of the total, an increase from 16.4 percent of the total in 1959.

Exploration for oil and gas in 1960 is to be distributed as follows (in meters):

RSFSR	3,050,000
Ukraine	430,000
Azerbaydzhan	390,000
Uzbekistan	225,000
Turkmenistan	175,000
Kazakhstan	175,000

Belorussia	20,000
Tadzhikistan	19,000
Georgia	15,000
Moldavia	10,000
Armenia	5,000

The 1960 drilling schedule also calls for the Main Administration of the Gas Industry USSR to drill 50,000 meters of holes to search for structures for the storage of gas underground.

More twin-well drilling is planned for 1960 in order to save on expenditures for building up the fields.

The industry is to be supplied with about 100 electrodrills, and some 300,000 meters of electrodrilling is planned for 1960, a 220,000-meter increase over 1959. About 125 of the BU-50 and BU-75 rigs, along with 3,750 small-diameter turbodrills, are to be manufactured for slim hole drilling. The 8-percent gain expected in total drilling during 1960 is to be achieved by an increase in drilling speed. The number of drilling rigs in service is expected to remain at about the same level as in 1959, although about 400 new rigs are to be delivered, primarily as replacements for obsolete equipment.

Drilling performance has increased steadily since 1950. Development drilling per rig-month has increased from 636 meters in 1950 to 1,085 meters in 1959. During the same period, performance on wildcat wells has increased from 208 meters per rig-month to 418 meters per rig-month. These faster drilling speeds represent gains of 72 percent and 102 percent, respectively. The performance in the Tatarskaya ASSR during this period was even better, having increased from 418 meters to 1,438 meters per rig-month in development and from 233 meters to 803 meters per rig-month in wildcat drilling. Some of the crews in this republic drilled at the rate of 3,000-4,000 meters and more per rig-month.

Despite the gains in 1959 and the expectations for 1960, there are several major drawbacks in drilling. A large amount of metal is lost each year in the wildcat wells. Casing is lowered into about 70 percent of these holes, some 40-50 percent of which turn out to be dry. Mechanisms and tools must be developed for recovering this casing so that it can be used again.

In the Tatarskaya ASSR, 560 development wells were drilled in 21,000 rig-days in 1958, but 29,000 more rig-days were spent in testing, or simply in idleness, on the holes -- an average of about 52 days per well. In the same year, an average of 54 days per well were spent in this manner in Azerbaydzhan, 29 days in Uzbekistan, 23 days in Kazakhstan, 16 days in the Ukraine, 24 1/2 days in Kuybyshevskaya Oblast, 20 days in Stavropol'skiy Kray, and 16 days in the Checheno-Ingushskaya ASSR.

Some development wells are idle for months after drilling until water flooding increases pressure sufficient to promote natural flow. Other delays are caused by an acute shortage of centrifugal pumps, delays in laying field lines, and installation of pumping jacks, traps, and other surface facilities.

Actual drilling time on an average Soviet well decreased 48.5 percent from 1950 to 1958. Cementing time was reduced 35.7 percent during the same period, and repair work decreased 12.9 percent, but round-trip time increased 30.2 percent and the time spent on auxiliary work remained virtually unchanged.

Drilling

11 NEW OIL WELLS PLACED ON STREAM IN EMBA BASIN IN LESS THAN 3 MONTHS -- Alma Ata, Kazakhstanskaya Pravda, 20 Mar 60

Gur'yev -- The drillers in the Emba Basin have placed 11 new oil wells in service since the beginning of 1960. A drilling crew has recently completed a well to a depth of 550 meters at the Karsak Oil Field in less than half the time planned. The Kazakhstanneft' Association fulfilled its first-quarter goal for exploratory and development drilling ahead of schedule. The association has already drilled hundreds of meters of wells scheduled for April.

16 OIL WELLS TO BE DRILLED FROM ONE BASE AT AZERBAYDZHAN OFFSHORE FIELD -- Moscow, Vechernyaya Moskva, 23 Mar 60

A large steel inlet [platform] has been built at the Neftyanoye Kamni Oil Field, offshore from Baku, for use as a base from which to drill a cluster of 16 directional oil wells. The drilling of the first two wells has already been started.

[Note: In cluster drilling, sometimes referred to as group-well drilling, the wells are drilled simultaneously in clusters or groups of two, three, etc.]

Discoveries

OIL FOUND AT LARGEST SOVIET GAS FIELD -- Stalinabad, Kommunist Tadzhikistana, 17 Mar 60

CPYRGHT

Gazli -- Six promising oil pools have been exposed recently beneath the gas-bearing strata of the Gazli Gas Field. The field, the largest natural gas field in the USSR, was discovered about 3 years ago in the Kyzylkum desert of Bukharskaya Oblast in Uzbekistan.

NEW OIL FIELD FOUND IN KUYBYSHEV AREA -- Baku, Bakinskiy Rabochiy, 19 Mar 60

CPYRGHT

Kuybyshev -- The transportation of crude oil has been started through a pipeline laid from the village of Alakayevka, near which an oil field has been discovered. Two wells are already producing large quantities of oil, whereas a third well is being prepared for production. The drilling of several more wells is under way.

Pipeline Construction

PIPELINE CONSTRUCTION GOAL OF SEVEN-YEAR PLAN MAY BE SURPASSED -- Moscow, Stroitel'stvo Truboprovodov, No 2, Feb 60, p 2

CPYRGHT

Based on the results of 1959, the Soviet Union may surpass its 1959-1965 goal for pipeline construction. It appears possible that the Gor'kiy-Cherepovets gas line, which is to run through Vladimir, Ivanovo, and Yaroslavl', can be built 2 years ahead of the original schedule. The construction schedule for some other gas lines, especially the Berezovo-Sverdlovsk and Gazli-Urals lines, may also be changed. [Note: It has been reported that the 2,100-km dual gas line from Gazli in Uzbekistan to the Urals, with one line to run to Chelyabinsk and the other line to Sverdlovsk, will be the largest trunk gas line in the USSR.]

In 1960, the USSR plans to place in service about 6,000 km of major pipelines, including about 4,000 km of major and lateral gas lines. Some of the important gas lines on which construction is to be under way in 1960 are the Saratov-Gor'kiy, Dashava-Minsk, Akstafa-Yerevan, Dzharkak-Samarkand-Tashkent, Krasnodarskiy Kray-Rostov-Lugansk-Serpukhov, Shebelinka-Ostrogozhsk, and Gazli-Urals lines.

A 30-percent increase is planned in oil line construction for 1960, with about 2,000 km of oil lines scheduled to go in service during the year. One of these lines is the 800-km Novosibirsk-Krasnoyarsk line, which is to go in service during the third quarter of 1960. During the

year, a 334-km oil line is to be built also from Ishimbay to Orsk. Petroleum product lines slated for construction are: a 415-km line from Gor'kiy to Ryazan', a 194-km line from Ozek Suat to Groznyy, and a 342-km line from Penza to Michurinsk.

The 1960 schedule also calls for the construction of more than 50 pumping and compressor stations, 29 of which are to be compressor stations. During the year, the gas industry must acquire the know-how of using new gas turbines. In 1959, these efforts were unsuccessful because of large structural defects in the machinery.

TRANS-SIBERIAN PIPELINE TO OPEN BEYOND KRASNOYARSK IN 1960 -- Leningradskaya Pravda, 12 Apr 60

The Tuymazy-Irkutsk oil line, construction of which is proceeding at full speed, is slated to open in 1960 as far as Uyar. Most of the pipe from the western boundary of Krasnoyarskiy Kray to Krasnoyarsk has already been laid. The eastern sector is now being prepared intensively by clearing away the breakthrough and by placing pipe along the projected route.

[Note: The construction of the 3,700-km oil line, to be the longest in the USSR, is scheduled for completion in 1962.]

Expansion

EXPANSION OF PETROLEUM BULK PLANTS IS PROBLEM IN ARMENIA -- Yerevan, Kommunist, 8 Apr 60

Storage capacity has doubled in the past 5 years at the Armenian petroleum bulk plants. Measures have been taken to mechanize production, and the receipt and delivery of petroleum products have been improved and speeded.

Nevertheless, a majority of the bulk plants are inadequately equipped with the necessary storage tanks. Some plants lack steam boiler facilities, heavy duty unloading pumps, and loading and unloading and other types of facilities. None of the plants mix fuel or regenerate and pruify lube oil.

The initial cargo turnover of the Yerevan bulk plant, the largest in Armenia, is 30 times as large as when the plant was built in 1922. New storage tanks were built, the receipt and delivery of petroleum products and lube oil were mechanized, and large steam boiler facilities for the heating of viscous petroleum products were installed. However, because of the limited site, the plant is heavily overloaded, yet further expansion of storage capacity is impossible.

The completion of the new Kirovakan Bulk Plant also poses a problem. The present plant is located on a site surrounded by dwellings and by warehouse installations of various organizations and private owners. It lacks fire-fighting apparatus. The limited size of the site and the lack of necessary storage space makes it impossible to meet the demands of the industry and agriculture of Kirovakan and the neighboring areas. Construction of the new plant began in 1958 but, in 3 years, only 1,110,000 rubles of the 4.5 million rubles estimated for construction has been appropriated.

III. SOLID FUELS

Coal Fields

PECHORA COAL BASIN -- Ugol'naya Promyshlennost' (The Coal Industry), book by I. M. Budnitskiy, Moscow, 1958

Mining was started at the Pechora basin during World War II. Completion of the construction of the Vorkuta-Kotlas Railroad was of great importance for the development of mining. At present, the coal industry of the basin is responsible for about 30 percent of the total gross production of the Komi ASSR.

A great part of the Pechora basin coal is lignite and semibituminous, and a smaller part (about one fourth of all reserves) is bituminous. At present, mostly steam-fat, gas, and long-flame coal is being extracted. Coal is being mined in seams 0.5-4.5 meters thick, with the average thickness being 1.47 meters.

The dip of the seams is mostly gentle. The calorific value of the coal is 7,400-8,500 cal/kg in the combustible part of the industrial product and an average of 6,527 cal/kg in the industrial fuel (type PZh).

The coal output in the Pechora basin amounted to 273,000 tons in 1940, 8,688,000 tons in 1950, and 15,433,000 tons in 1956.

During World War II, its chief consumers were industrial enterprises and the city economy of Leningrad, railroads of the northwestern part of the USSR, and the northern maritime fleet. After the war, Pechora coal became a fuel base for the restoration and development of the national economy of the northwestern and northern regions of the USSR, and Leningrad, which is responsible for about 90 percent of the entire consumption of coal of this basin.

The large consumers of Pechora coal are railroad transport and electric power stations. However, in the near future the structure of Pechora coal consumption should be changed considerably.

In the first place, the presence, in the Pechora basin, of large reserves of coking coals which are in short supply in other coal basins, makes it economically expedient to utilize this more widely for coking purposes. A new metallurgical region is being developed in the northwestern part of the RSFSR on the basis of Pechora coal.

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In the second place, when direct transport connections have been created between the Pechora basin and the Urals, coal from Vorkuta and other deposits will be extensively used in Ural metallurgical plants. The distance from the Vorkuta coal deposit to the iron ore deposits of the Kola Peninsula is about 2,800 km, but it is only about 800 km to Ivdel' and 1,200 km to Nizhniy Tagil in the northern Urals.

KIZEL COAL BASIN -- Ugol'naya Promyshlennost' (The Coal Industry), book by I. M. Budnitskiy, Moscow, 1958, pp 105-107

The Ural region is relatively poor in coal reserves, although extensive exploration of its coal deposits was made during the 5-year plan periods. By 1937, explored reserves of Ural coal amounted to tens of times those of 1913 but they still were less than 0.5 percent of total USSR reserves. The Kizel and Chelyabinsk basins are the largest in the region.

The Kizel bituminous coal basin is one of the oldest in the Urals and the only one in the area yielding coking coal. Located on the left slope of the Urals, its boundaries are the Yayva River on the north and the Vil'va River on the south. The basin is about 100 km long and 15-20 km wide, comprising an area of approximately 3,000 sq km.

During the prewar 5-year plans, industrial development of the Kizel basin was rapid since it was one of the links of the Urals-Kuznetsk combine. Electrification of the Kizel-Chusovoy-Goroblagodatskaya Railroad line has facilitated the delivery of coal and coke and strengthened the economic ties of the Kizel basin with the consumers of its coal.

The increased demand for coal during World War II led to the further development of the basin. During 1941-1945, 1.6 times as much coal was extracted as in 1940. New deposits were explored, among them the Gremyachinsk, the Us'va, and the Kos'va.

The number of coal seams, totaling 25, differs in various areas of the basin, but the number of working seams ranges from one to five.

The hydrogeological conditions of the basin make it difficult in places to sink mines and work the coal seams, particularly in sections where water-filled hollows occur.

The coal-bearing quality of the basin is relatively low and variable, with the thickness of working seams ranging from 0.5 to 1.5 meters. The basin contains gas coal and fat-caking coal with a calorific value of 6,150-7,000 cal/kg for the combustible part of the industrial product and an average of 5,670 cal/kg for the industrial product. Kizel coal is 2-2.5 times as tough as Donbass coal, which is known to be very tough.

After preliminary cleaning, Kizel coal mixed with Kuznetsk coal is suitable for coking. Its high sulfur content makes it difficult to use in ferrous metallurgical plants. However, it can be used in nonferrous metallurgy, in copper production. Chemical processing of Kizel coal results in a high yield of by-products such as gas, tar, and phenol.

The three chief consumers of Kizel coal, who have almost equal requirements for it and who are responsible for 80 percent of its consumption are railroad transport, electric power stations, and metallurgy.

Development of the Kizel coal basin in the near future depends on an increase in the depth of coal-extraction operations. At present, operations in a number of mines are being conducted at a depth of 650-870 meters. Up to 50 percent of all Kizel coal is mined at a depth of more than 300 meters. In the future, operations will be carried to a depth of up to 600-1,000 meters and 55-60 percent of all coal extracted will come from these levels. In this connection, problems of mine sinking, opening up of deposits, ventilation, combating of gassy conditions, roof control, and water drainage will be considerably complicated.

CHELYABINSK LIGNITE BASIN -- Ugol'naya Promyshlennost' (The Coal Industry), book by I. M. Budnitskiy, Moscow, 1958, pp 107-108

The Chelyabinsk lignite basin is located on the eastern slope of the Urals, southeast of Chelyabinsk. It extends in a narrow, meridonal strip, more than 150 km in length from north to south, and averaging about 5 km in width. The number of seams ranges from 5 to 30 varying in thickness from 0.75 to 25 meters and in some places reaching 60-150 meters (Korkino area). Seams of medium thickness predominate. About 95 percent of the coal is extracted from seams more than 1.2 meters thick.

The coal seams of the basin are not located at a great depth. Sixty-six percent of the extraction is done in mines with a working depth of up to 150 meters.

Chelyabinsk coal is lignite, partly humic, with a medium ash content and a low sulfur content quickly crumbling to fines when exposed to air. The calorific value is 6,700-7,300 cal/kg for the combustible part of the industrial product and averages 4,165 cal/kg for the industrial product.

The Korkino, Kamyshinskiy, and Yemanzhelin deposits, opened and put into operation at the end of the second and the beginning of the third 5-year plans, are the most important in the basin. The open-pit method is used in the Korkino deposit and for about 40 percent of all mining of the basin. The pits being exploited are large mechanized coal enterprises.

Electric power stations consume the largest part of Chelyabinsk coal, about 65 percent. Ferrous and nonferrous metallurgy are in second place, using the coal for fuel purposes. Chelyabinsk coal can also be used for gasification to obtain high-calorie gas.

COAL DEPOSITS OF CENTRAL ASIA -- Ugol'naya Promyshlennost' (The Coal Industry), book by I. M. Budnitskiy, Moscow, 1958, pp 115-116

The coal industry started operations in the modern central Asian republics about 60 years ago. At present, eight coal regions have been discovered and explored, among them the South Fergana lignite region, the North Fergana and East Fergana coal regions, the Tashkent-Chimkent lignite region, the Tissarskiy coal region, and the Caspian coal region. These regions encompass 40 coal deposits with total reserves of more than 20 billion tons.

Part of the deposits are being worked on an industrial scale. In the Kirgiz SSR, mines have been developed at Sulyukta, Kyzyl-Kiya, Kok-Yangak, Shurab [partly on territory of the Tadzhik SSR], Tash-Kumyr, and Uzgen. In the Uzbek SSR, about 115 km from Tashkent, lies the Angren coal deposit, which has favorable mining and geological conditions; the coal is mined mainly by the open-pit method.

Before World War II, coal was extracted chiefly in the Kirgiz SSR, but 41 percent of the coal output for Central Asia now comes from the Uzbek SSR. Coal mining in Central Asia has progressed at a rapid rate: 91,100 tons in 1911; 466,000 tons in 1930; 1,907,400 tons in 1940; 4,237,100 tons in 1950; and 6,868,100 tons in 1956.

However, the rapid economic growth of the republics of Central Asia has made it necessary to bring in a large amount of Kuznetsk and Karaganda coal in addition to the local supplies. In 1955, 2.9 million tons was brought in.

To eliminate the gap between requirements and output, new coal enterprises must be constructed. One such enterprise which is now under construction is the Apartakskiy open coal pit, the first unit of which, with a productivity of one million tons [per year], will be put into operation in 1959.

TUNGUSKA COAL BASIN -- Ugol'naya Promyshlennost' (The Coal Industry), book by I. M. Budnitskiy, Moscow, 1958, pp 121-123

A number of large coal basins are located in East Siberia. Two of these, the Tunguska and the Lena, are among the richest coal reserve areas in the USSR. Other coal basins in East Siberia are the Kansk-Achinsk, the Yuzhno-Yakutsk (Aldan), the Transbaykal, the Minusinsk, and the Ulukhemskiy.

The Tunguska coal basin takes in an enormous territory lying between the Yenisey, the Lena and its left tributaries, the middle and upper part of the Angara River, and the northern Polar Sea. The area of coal-bearing deposits reaches 1-1.2 million sq km.

Natural conditions of this area are severe since a belt of perpetual frost runs through it. This has caused great difficulties in geological exploration of the region, which has only recently been undertaken. The Angara, Kureyka, and Noril'sk areas and coal deposits along the Nizhnyaya Tugunska have been studied more than other parts of the basin. For the 17th International Geological Congress in 1937, geological reserves of coal in the basin were estimated at 440 billion tons.

The thickest of the coal-bearing deposits is in the basin of the lower part of the Nizhnyaya Tunguska, where all strata total more than 1,500 meters thick. Coal of various types has been discovered here, from anthracite to long-flame and sapropel. Some seams are 6 meters thick.

In the Noril'sk area, where industrial exploitation is in progress, seams 5-15 meters thick are often discovered.

In the southern part of the Tunguska basin, large isolated deposits of bituminous coal occur with seams more than 30 meters thick, which can be worked by the open-pit method.

The Tunguska basin has coal suitable for raw material for the metallurgical and chemical industries, as well as for fuel purposes; therefore, the outlook for the industrial exploitation of the basin is good.

LENA COAL BASIN -- Ugol'naya Promyshlennost' (The Coal Industry), book by I. M. Budnitskiy, Moscow, 1958, p 123

The Lena coal basin, Yakutskaya ASSR, unites more than 100 coal deposits in an area of about 400,000 sq km in the basin of the Lena River and its tributaries, the Vilyuy and the Aldan. The Lena basin is one of the largest in the USSR in the size of its coal-bearing area.

The western part of the basin has been best investigated in a geological respect, but the Lena basin as a whole has been studied only slightly. Those coal-bearing areas which are located near inhabited regions have been best developed. However, at present, it is possible to characterize the Lena coal basin as one of the richest. Its total geological reserves are estimated at many tens of billion tons of various coal. In the western part of the basin, the coal is predominantly lignite; in the eastern part, bituminous.

KANSK-ACHINSK COAL BASIN -- Ugol'naya Promyshlennost' (The Coal Industry), book by I. M. Budnitskiy, Moscow, 1958, pp 121-122

The Kansk-Achinsk Coal Basin is located in Krasnoyarskiy Kray, along the Siberian Railroad, from Mariinsk to the Tayshet Station, partly encroaching on the eastern part of Kemerovskaya Oblast. A systematic study of the coal-bearing stratum of the basin was started during the First Five-Year Plan period. A large coal industry was developed here during World War II, particularly in the postwar period.

The coal-bearing belt extends for 700 km and is 200-300 km wide. In some places the coal-bearing deposits extend in tongue-like formations to the north and south.

More than 100 individual coal seam outcroppings, as well as 23 coal deposits, have been counted in the basin. A number of the coal seams are characterized by great thickness. For specific deposits the number of coal seams ranges from one to 30. The lay of the seams is almost horizontal and, over large areas, shallow and easily accessible for open-pit mining.

The coal of the basin is primarily lignite, an excellent fuel coal, with a calorific value of 6,800-7,300 cal/kg for the combustible part of the industrial product and about 3,750 cal/kg for the industrial product.

Bituminous coal is also found in the basin in the Sayan-Partizanskiy deposit, located in the foothills of the Vostochnyy Sayan Mountains.

The basin holds a leading place in the USSR in the amount of explored reserves. The lay of the principal part of the reserves is very favorable for working by the open-pit method, which guarantees obtaining the cheapest coal in the USSR. During 1956, production costs of coal for the Vostsibugol' Combine were 38.4 percent of the average branch costs for the Ministry of Coal Industry USSR.

The largest deposits of the basin are the Irsha-Borodino, the Nazarovo, the Bogotol, and the Itatskiy. The coal reserves which can be worked by the open-pit method are estimated at 10 billion tons.

The largest consumers of Kansk-Achinsk coal are railroad transport and electric power stations. Coal from the basin is used chiefly within the bounds of Krasnoyarskiy Kray.

SOUTHERN YAKUTSK (ALDAN) COAL BASIN -- Ugol'naya Promyshlennost' (The Coal Industry), book by I. M. Budnitskiy, Moscow, 1958, pp 123-124

Large reserves of coking coal have been discovered in the southern part of the Yakutskaya ASSR, in the Chul'man area. The prospective reserves of coking coal here can be compared with the same coal of the Donbass and Kuzbass.

The basin is approximately 400 km from the Siberian Railroad. It has seams up to 20-30 meters thick, lying at a shallow depth so that it is possible to work them by the open-pit method. Deposits of high-grade iron ore have been discovered rather near the coal deposits and are being successfully explored.

Intensive geological work is under way here to explore further the coking coals and the entire complex of ore and auxiliary raw materials for ferrous metallurgy, as well as raw materials for the chemical industry, natural gas, nonferrous ores, and rare metals.

Successful results of these operations can produce real economic grounds for a practical solution to the problem of creating in East Siberia an independent ferrous metallurgical base so necessary for these regions.

IRKUTSK COAL BASIN -- Ugol'naya Promyshlennost' (The Coal Industry), book by I. M. Budnitskiy, Moscow, 1958, pp 124-125

The Irkutsk Coal Basin extends from the northwest to the southeast, almost from Nizhneudinsk to Lake Baykal. Administratively the territory of the basin belongs to Irkutskaya Oblast and in part to the Buryat-Mongol'skaya ASSR. The basin is about 500 km long and averages 80 km in width. Its total area exceeds 35,000 sq km.

The coal-bearing qualities of specific regions of the Irkutsk basin are not all known. The central part of the basin has been thoroughly studied. It has been photographed in a detailed geological survey and almost completely explored.

The most studied part of the basin is the Cheremkhovo region, where about 30 percent of all explored reserves are located. This is the oldest of the regions of the basin now being exploited. Its industrial exploitation has been going on for more than 50 years.

Three to five active seams, complicated in structure, differing in thickness, and stratified, are found in the basin. Here the coal seams lie at a depth rarely exceeding 50-70 meters. At present, more than 50 percent of the coal is being mined by the open-pit method. By the end of the Sixth Five-Year Plan, the proportion of open-pit operations here will rise to 70 percent.

Cheremkhovo coal is valuable fuel coal. The calorific value of the combustible part of the industrial product is 6,800-7,600 cal/kg, while that of the entire industrial product averages 5,540 cal/kg.

Cheremkhovo coal is stable under storage conditions and is seldom subject to spontaneous combustion. The high yield of volatile substances makes it burn easily and actively and makes it particularly valuable as locomotive or ship coal.

Cheremkhovo coal can also be used in a mixture with caking coal for coking.

In the prerevolutionary period, railroad transport was the only consumer of Cheremkhovo coal. All other branches of the economy depended on wood. Socialist industrialization of the regions of East Siberia changed the structure of the fuel balance substantially. Now the chemical industry, the machine-building industry, and electric power stations are the main consumers of Cheremkhovo coal, in addition to railroad transport.

MINUSINSK COAL BASIN -- Ugol'naya Promyshlennost' (The coal Industry), book by I. M. Budnitskiy, Moscow, 1958, p 125

The Minusinsk Coal Basin is located in the southwestern part of East Siberia, along the Yenisey River and its left tributary, the Abakan. From an administrative standpoint, it belongs to Khakasskaya Autonomous Oblast, Krasnoyarskiy Kray. The chief center of the coal industry is Chernogorsk.

The Chernogorsk and Izykhskiy deposits are the largest in the basin. Coal sections are known here which are suitable for working by the open-pit method.

The coal is bituminius, long-flame, gassy, and slightly caking. The calorific value is about 7,000 cal/kg for the combustible part of the industrial product.

Minusinsk Basin coal is good fuel and can also be used as raw material for chemical processing. In distillation it yields a considerable amount of primary tar.

This coal is used not only within the bounds of Krasnoyarskiy Kray, but also in other regions of Siberia. Railroad transport is the largest consumer.

TRANSBAYKAL COAL DEPOSITS -- Ugol'naya Promyshlennost' (The Coal Industry), book by I. M. Budnitskiy, Moscow, 1958, p 126

The Transbaykal coal deposits are scattered over an extensive area in the form of more than 40 small, individual, isolated coal sectors. The largest of these are the Chernovskiy and the Bukachacha sections, which are responsible for about 75 percent of the entire output of Transbaykal coal. For the most part the sections stretch from the southwest to the northeast and are located in valleys and chain-like depressions, in a curved line.

Transbaykal coal is mostly lignite but there is also bituminous coal in the Bukachacha deposit in Chitinskaya Oblast. Bukachacha coal is very valuable for the entire Transbaykal area. It has coking properties and the calorific value of the combustible portion of the industrial product is 7,600-8,200 cal/kg. Transbaykal coals are used for local fuel purposes and for railroad transport.

ULUG-KHEMSKIY COAL BASIN -- Ugol'naya Promyshlennost' (The Coal Industry), book by I. M. Budnitskiy, Moscow, 1958, p 126

Bituminous coal deposits of considerable industrial interest were discovered in Tuvinskaya Autonomous Oblast during the Fifth Five-Year Plan period. The geological reserves in the Yuzhno-Ulug-Khemskiy Coal basin are estimated at approximately 18 billion tons.

It has been established that this coal mixed with lean coal from the Kuzbass can yield acceptable metallurgical coke.

COAL BASINS AND DEPOSITS OF FAR EAST -- Ugol'naya Promyshlennost' (The Coal Industry), book by I. M. Budnitskiy, Moscow, 1958, pp 127-128

Large reserves of coal in the Far East are concentrated in deposits and basins located in various parts of its enormous territory: Primorskiy Kray, Kamchatka, Chukotskiy, and Sakhalin. These reserves include bituminous coal and lignite.

The Bureya coal basin, the largest in the Far East, is located along the upper and middle part of the Bureya River, a tributary of the Amur, 300 km from the Far East Railroad. A study of the basin was not started until 1932; it was made in connection with the economic development of Komsomol'sk and the area about it. Industrial exploitation of the basin has now begun.

The coal here is bituminous and humic. The calorific value of the combustible part of the industrial product is 6,100-7,500 cal/kg. Almost all the coal has a high ash content, 27-39 percent for the industrial product, and requires cleaning.

Coal from many seams in the basin cakes and when mixed with a lean additive in the amount of 10-15 percent yields coke. However, coal for coking must first be cleaned to reduce its ash content.

Sakhalin has considerable reserves of bituminous coal and lignite bituminous coal deposits in the northern part of the island and deposits of both in the southern part, but far more lignite.

Coal has been extracted in Sakhalin for 100 years. In 1945 coal production in northern Sakhalin was 50 times that of 1925. Now the coal industry is taking one of the leading places in the economy of the island, constituting about 20 percent of its total industrial production.

A characteristic peculiarity of the coal deposits of Sakhalin is the great diversity and complexity of mining and geological conditions of the coal beds. The seams being worked range from 0.7 to 6 meters or more in thickness. About 80 percent of the output is long-flame coal or lignite. There is little coking coal.

The bituminous coal of Sakhalin has a calorific value of 7,700 to 8,650 cal/kg for the combustible portion of the industrial product and 5,700 to 6,800 cal/kg for the industrial product. The lignite has a calorific value of 7,200 cal/kg for the combustible part of the industrial product, and 5,035 cal/kg for the industrial product.

The largest consumer of Sakhalin coal is the timber and paper industry, followed by the food industry and the maritime fleet. About 75 percent of Sakhalin coal is used on the island itself.

Discoveries

NEW COAL DEPOSIT DISCOVERED IN ARKHANGEL'SKAYA OBLAST -- Moscow, Sovetskaya Rossiya, 8 Apr 60

Geologists have discovered an industrial seam of bituminous coal, 25 meters thick, running close to the surface 30 km from the settlement of Khoseda-Khard, in stretches laid bare by the Adz'va River. The reserves of coal here have not yet been definitely estimated, but preliminary data indicate that extensive workings are possible.

Production

STALINUGOL' COMBINE ACHIEVES HIGH PRODUCTION -- Kiev, Pravda Ukrainy, 30 Mar 60

Since the beginning of 1960, the Stalinugol' Combine of the Donbass has produced 500,000 tons of above-plan coal, considerably exceeding its obligations for the entire year.

On 26 March, the Snezhnyanantratsit Trust completed the 1960 first-quarter plan. It has already shipped 80 trainloads of above-plan coal during 1960. The cycle work schedule is in operation everywhere in mines of this trust.

On 28 March, the Krasnoarmeyskogol' Trust also completed the 1960 first-quarter plan.

Shale

SHALE OPEN PIT UNDER CONSTRUCTION IN ESTONIAN SSR -- Vienna, Osthandel, No 3, Mar 60

The largest mechanized open pit in the USSR for bituminous shale is at present being constructed in the Estonian shale area of Kokhtla-Yarve. The yearly capacity of this pit will be 7.2 million tons and latest estimates put its construction costs at over one third less than for an underground mine of the same capacity. At the same time, production costs of shale will be cut in half.

Since shale occurs 8-12 meters below the surface in many places in the Estonian shale basin, open-pit mining will develop in particular there in the near future. Toward the end of the Seven-Year Plan period, the proportion of open-pit mining in Estonian bituminous shale extraction will rise from 8 to 40 percent. Reserves in combustible shale in the Estonian SSR are estimated at many billion tons.

FIRST ESTONIAN SHALE-PREPARATION MILL STARTS OPERATING -- Moscow, Izvestiya, 1 May 60

Yykhvi, Estonian SSR -- On 29 April, the first unit of a shale-preparation mill, the first in the Estonian shale basin and the only one of its kind in the world, started operating at Mine No 10.

Coal Machinery

FIRST HYDRAULIC COAL COMBINE IN OPERATION -- Kiev, Pravda Ukrainy, 26 Apr 60

The KG, the first hydraulic coal combine in the world, designed by Ya. Ya. Gumennik, has been put into operation in Mine No 12 imeni Dzerzhinskiy of the Kadiyevugol' Trust.

The combine has a productivity of 100-130 tons of coal per hour and can extract coal in hydraulic sections of thin seams, 0.7-1 meter thick, where working conditions are particularly difficult. The design of this machine differs in principle from all previously produced coal machines. The

KG is automatically controlled from the starting place, located in a drift, and goes along the seam in a given direction. The motor of the machine is operated by water under high pressure. This same water moves lumps of coal along the face of the mine. The productivity of the KG is 15-20 times as great as that of other machines.

An experimental model of the machine has been made in the Malakhovskiy Experimental Plant.

IV. FERROUS METALLURGY

Blast Furnaces

USE OF NATURAL GAS FOR BLAST FURNACES -- Moscow, Trud, 23 Apr 60

At present, more than 30 blast furnaces of the Ukraine are operating with the use of natural gas. In the near future, blast furnace operators at other metallurgical plants in the Central Region and in the Urals will convert their furnaces to the use of natural gas.

Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 24 Apr 60

Estimates indicate that the conversion to natural gas of all blast furnaces of the European part of the USSR and the Urals would result in cutting capital expenditures 1.4 million rubles in the production of conversion pig iron in the amount provided for by the 1965 plan. If natural gas is used in combination with oxygen, this saving will be increased to 1,580,000 rubles.

Coke Ovens

NEW COKE OVENS FOR MAGNITOGORSK COMBINE -- Moscow, Komsomol'skaya Pravda, 19 Apr 60

A new block of coke ovens with its own chemical plant has been erected at the Magnitogorsk Metallurgical Combine. The 12th coke battery has just been made ready for drying operations and initial heating.

Construction and Expansion

NOVO-LIPETSK PLANT TO HAVE COLD-ROLLING SHOP -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 10 Apr 60

The Novo-Lipetsk Metallurgical Plant, commonly referred to as the Lipetsk Magnitka, is constantly growing and improving. At present, a cold rolling shop, one of the most important structures of 1960, is being erected on a 12-hectare site as a part of this plant. The first sheets of transformer steel are to be produced by the rolling mill of the new shop in June 1960.

NEW ORSK-KHALILOVO ROLLING MILL PRODUCES FIRST PRODUCTS -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 1 Apr 60

CPYRGHT

On 30 March 1960, the new 2800 rolling mill of the Orsk-Khalilovo Metallurgical Combine was put into operation. It has already put out its first products.

LARGE NEW STRIP MILL BEING CONSTRUCTED AT MAGNITOGORSK COMBINE -- Moscow, Pravda, 12 May 60

CPYRGHT

A large 2500 wide-strip mill is being constructed at the Magnitogorsk Metallurgical Combine. It will produce steel plate more than 2 meters wide for large-diameter welded pipe and also for the motor vehicle and tractor industries. This mill will have the largest capacity in Europe.

The plan provides for putting the first unit of the mill into operation in January 1961, but builders of the installation have determined to achieve this by 5 December 1960, Soviet Constitution Day.

PLATE-METAL FINISHING SHOP COMPLETED AT ALCHEVSKIY PLANT -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 20 Apr 60

CPYRGHT

The construction of one of the largest plate-metal finishing shops in the USSR has been completed at the Alchevskiy Metallurgical Plant imeni Voroshilov. It is equipped with the most up-to-date devices. Large continuous, roller furnaces with a ten-place automatic control panel are used for heat treatment of the metal. For the first time, heat treatment of the plates is done in presses so that a flat plate, not requiring further leveling, is obtained.

The new shop is intended to improve the quality of plate steel from the very large 2800 rolling mill, with a resulting increase in the variety of output.

A hot test run of the aggregates has been started.

NEW WIRE-ROD MILL FOR KRIVOY ROG PLANT -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 15 Apr 60

CPYRGHT

A large, continuous 250-2 wire-rod mill [probably means the second 250 wire-rod mill] is being assembled at the Krivoy Rog Metallurgical Plant. The mill is an enormous structure about 600 meters long. It will produce wire rod, an intermediate product for obtaining wire of varying diameter.

NEW WIRE-ROD MILL COMPLETELY MECHANIZED AND AUTOMATED -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 24 Apr 60

CPYRGHT

The second large continuous 250 wire-rod mill was put into operation 10 days ahead of schedule at the Krivorozhstal' Mettallurgical Plant. All its processes are completely mechanized and automated, from feeding heated billets to tying up coils of rolled wire rod and loading them onto railroad cars.

BILLET MILL UNDER WAY AT CHEREPOVETS PLANT -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 1 Apr 60

CPYRGHT

A 700 continuous billet mill is under construction at the Cherepovets Metallurgical Plant.

PIPE-WELDING SHOP UNDER CONSTRUCTION -- Moscow, Stroitel'naya Gazeta, 4 May 60

CPYRGHT

Novosibirsk -- shop for the electric welding of pipe is under construction at the Metallurgical Plant imeni Kuz'min. This plant is to become the largest USSR enterprise for the production of electric welded pipe. Trust No 43, which is building this shop, is starting preliminary operations for the construction of a second, larger shop.

PIPE-CASTING PLANT EXPANDS -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 27 Mar 60

CPYRGHT

Construction of a shop for the centrifugal casting of iron water pipes 50 mm in diameter has been started at the Makeyevka Pipe-Casting Plant imeni Kuybyshev. When this shop is put into operation, the daily production of pipe will increase to more than ten times its present level and the cost of production will be considerably lowered. Working conditions of the casting personnel will also be essentially changed. The spacious building where the automatic lines are in operation will be dust-free and gas-free.

During the Seven-Year Plan period, the plant will undergo radical renovation. In a few years it will be converted to centrifugal pipe casting. Pipe production will be increased fourfold.

KRIVOROZHSTAL' PLANT INCREASES PRODUCTION FACILITIES -- Moscow, Stroitel'naya Gazeta, 1 Apr 60

In 1960, installations required for the complete technological process of producing metal are being introduced into production in the Krivorozhstal' Metallurgical Plant. These include the largest blast furnace in the USSR and in Europe, two coke batteries, an agglomerating belt, two open-hearth furnaces, and wire mill No 2.

During 1956-1960, the Krivorozhstal' Metallurgical Plant acquired six rolling mills. The construction of the first of these, medium section mill No 1, took almost 2 years, while wire mill No 2, completed in 1960, took only 3 months to build.

Production

GEORGIAN SSR PROGRESSES IN STEEL PRODUCTION -- Tbilisi, Zarya Vostoka, 21 Apr 60

Ferrous metallurgical production was started in the Georgian SSR in 1950, when steel was produced in the first open-hearth furnace. Now, the products of the Rustavi Metallurgical Plant -- steel, pig iron, seamless tubes, sheet steel, and angle iron -- are known to the entire USSR and are exported to the People's Democracies and to India.

UZBEK STEEL WORKERS ACHIEVE HIGH PRODUCTION -- Moscow, Komsomol'skaya Pravda, 14 Apr 60

During the preparation for the 90th anniversary of Lenin's birth, Uzbek metallurgists produced steel only by high-speed methods. The average amount of metal yielded per square meter of the hearth per open-hearth furnace exceeded 9 tons. One steel worker achieved a plant record with 10.32 tons of steel, almost 2 tons more than called for by the plan.

Ore Extraction

PLANS FOR WORKING YAKOVLEVSKIY MINE COMPLEX -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 23 Mar 60

The Yakovlevskiy Mine Complex of the Kursk Magnetic Anomaly is unique in its reserves of iron ore and in the iron content of the reserves. About 10 billion tons of ore containing 45-69 percent of iron have been explored here. The ore body ranges in thickness from 102 to 150 meters.

According to the plan for the mine complex, up to 15 million tons of ore will be extracted here per year. Since the ore is located in watery sections, a combined method of drying it is used with the help of water-reducing boreholes, drainage of the mine workings with filters, and other drainage installations.

In sinking shafts, the rock will be extensively frozen. Full mechanization and automation of all production processes is contemplated. The average output per worker on the ore mass will amount to more than 1,780 tons.

Metal Economy

USE OF LOW-ALLOY STEEL SAVES FERROUS METAL -- Moscow, Trud, 24 Mar 60

The use of low-alloy steel in the production of SK-3 excavators results in a 20-percent saving in ferrous metals.

MOSCOW ENTERPRISES WASTE HUGE AMOUNTS OF METAL -- Moscow, Trud, 24 Mar 60

A one-percent reduction in metal tailings at Moscow enterprises would yield enough metal for the production of 6,000 Moskvich automobiles.

Metallurgical Equipment

NOVO-KRAMATORSK PLANT COMPLETES NEW MILL -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 2 Mar 60

The Novo-Kramatorsk Machine Building Plant has completed the assembly of an experimental-industrial 1200 mill with 20 rolls for cold-rolling thin steel sheet.

It is capable of rolling a high-alloy steel strip 1,000 mm wide and 0.1 mm thick.

BLAST FURNACE AIR-BLOWING INSTALLATION MADE -- Leningradskaya Pravda, 9 Mar 60

The Leningrad Nevskiy Plant has developed plans for an air-blowing installation for the world's largest (2,000-cu-m) blast furnaces. The centrifugal compressor of this installation will deliver 5,500 cu m of air per minute and increase the pressure up to 4.5 atmospheres.

Its condenser-type drive turbine will have a capacity of 22,000 kw and will work with high initial steam parameters as well as with a 90-atmosphere pressure and at a 535-degree temperature.

At present, the plant is assembling a compresor and a new type of turbine. They will be completed in 1961.

NEW ROLLING MILL EQUIPMENT FOR CHINA -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 23 Mar 60

The Novo-Kramatorsk Machine Building Plant is assembling a sheet-package tilter with a stacker and a stationary table for sorting metal sheets 4-20 mm thick and weighing up to 2 tons. This equipment will be installed on the 2300/1700 sheet-rolling mill in the T'ai-yuan Metallurgical Plant in China.

NEW MACHINE SHOP AT KARAGANDA PLANT TO PREPARE METALLURGICAL EQUIPMENT -- Moscow, Komsomol'skaya Pravda, 29 Apr 60

The first unit of a large machine shop has been put into operation at the Karaganda Metallurgical Plant, which is under construction. It is equipped with all of the most up-to-date machine tools and mechanisms. The shop will prepare equipment for blast furnace, steel, and rolled stock production, as well as repair locomotives and heavy-load railroad cars.

V. NONFERROUS METALS AND MINERALS

Aluminum

BOGOSLOVSK ALUMINUM PLANT TO OPERATE ALUMINA PROCESSING SHOP -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 8 Apr 60

CPYRGHT

The production of alumina in the USSR lags considerably behind the production capacity of the electrolytic process. This factor is exercising a restraint on the general growth of the aluminum industry. Increased aluminum production will depend to a large extent on increased supplies of alumina from the Urals.

In 1960, an alumina processing shop will be put into operation at the Bogoslovsk Aluminum Plant. The capacity of the Ural Aluminum Plant for processing alumina is being expanded.

SUMGAIT ALUMINUM PLANT DOUBLES PRODUCTION -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 1 Apr 60

CPYRGHT

The Sumgait Aluminum Plant has more than doubled its production of aluminum since its establishment 5 years ago.

The fifth anniversary of the plant was celebrated by putting two new, large buildings into operation. All labor-consuming operations in the electrolytic cells have been mechanized. The plant has exceeded by hundreds of tons its production plan for the current quarter.

KANAKER ALUMINUM PLANT TO CONSTRUCT FOIL-ROLLING SHOP -- Yerevan, Kommunist, 30 Apr 60

CPYRGHT

The Seven-Year Plan of the Kanaker Aluminum Plant calls for the construction of a foil-rolling shop. A two-story structure with five large wings is now being completed at the construction site, which occupies an area of 16,000 sq meters.

The shop will produce foil for industrial needs in the electrical-engineering and the food industries. The shop will also produce aluminum in sheets for manufacturing kitchen utensils and products in the machine-building, aviation, and other branches of industry.

CONSTRUCTION OF KARELIAN ALUMINUM PLANT PROGRESSING -- Pravda, 28 Apr 60

Construction of the second section of the Nadvoitsy Aluminum Plant is proceeding at a rapid pace. The plant is one of the largest new construction projects in the Seven-Year Plan of the Karel'skaya ASSR.

Two rows of electrolytic cells are now being installed in the electrolytic building, which is scheduled to produce its first output in 1960.

ALUNITE MINE TO SUPPLY CAUCASIAN REPUBLICS -- Baku, Bakinskiy Rabochiy, 30 Apr 60

An alunite mine under construction in Zaglik will provide raw material for the nonferrous metallurgical industry of the Caucasus republics.

Copper

ALAVERDI COPPER-CHEMICAL COMBINE EXPANDS PRODUCTION FACILITIES -- Yerevan, Kommunist, 30 Apr 60

The first line has been put into operation in the second section of the electrolytic shop of the Alaverdi Copper-Chemical Combine. Full operation of the second section of the electrolytic shop, scheduled for May 1960, will increase the production of refined copper 40 percent over 1959.

SUMSAR CONCENTRATION MILL TO PRODUCE COPPER CONCENTRATES -- Frunze, Sovetskaya Kirgiziya, 29 Apr 60

The Sumsar Concentration Mill has added the production of copper concentrates to its operations. Deposits of copper-polymetallurgical ores discovered in Sumsar will provide raw material, which will be processed in a separate section to be constructed in the plant in 1961.

Experimental work is being continued in the full utilization of the rich Sumsar deposits.

Lead-Zinc

LEAD-ZINC COMBINE EXCEEDS PRODUCTION QUOTAS -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 17 Apr 60

The Ust'-Kamenogorsk Lead-Zinc Combine has already exeeded production levels scheduled for 1961. The production of individual nonferrous metals has reached quotas scheduled for the final years of the Seven-Year Plan.

Labor productivity has increased, hundreds of thousands of kilowatt-hours of electric power have been conserved, and a profit of 5 million rubles over that planned was made by the combine, as of April 1960.

LEAD-ZINC COMBINE INSTALLS NEW EQUIPMENT -- Alma-Ata, Kazakhstanskaya Pravda, 30 Apr 60

The installation of equipment was completed in a new shop in the concentration mill of the Tekeli Lead-Zinc Combine. The new shop employs the method of heavy suspension, and operation of the recently installed equipment will increase production greatly and will improve working conditions.

Tin

TIN PRODUCTION INCREASES IN FAR EAST -- Moscow, Sovetskaya Rossiya, 6 Apr 60

Workers of the Khrustal'nyy Mining and Concentration Combine in Primorskiy Kray have discovered a fast method of extracting tin ores from mining stopes. As a result, labor productivity in working thin-veined deposits in fall 1959 increased by a factor of 3, 4, and even 5 throughout an area extending from the Sikhote-Alin' to the Urals, and the cost of one ton of extracted ore decreased by almost 17 rubles.

The production of miners of the far east was more than twice that of other areas. In 1959, they surpassed production quotas by scores of tons of ore and saved more than 35 million rubles.

Primorskiy miners have achieved such success by introducing into operation new equipment, using more powerful explosives, and drilling holes of a smaller diameter.

The Khrustal'nyy Mining and Concentration Combine in the first 2 months of 1960 exceeded its production quotas and saved 3.3 million rubles. Labor productivity increased an additional 10 percent, so that by the end of 1960 labor productivity will be equal to that scheduled for 1965.

VACUUM PROCESS USED IN TIN REFINING -- Alma-Ata, Kazakhstanskaya Pravda, 21 Apr 60

Tin refinement by vacuum processing is now being introduced on a wide scale in the nonferrous metallurgical industry of the USSR. Experimentation has demonstrated the high technical and commercial merits of the vacuum process in the production of a wide range of metals.

The method utilizes the principle of continuous distillation in refining crude tin. Installation of continuous-distillation equipment increases the labor productivity of metallurgists by a factor of 2-3 and saves millions of rubles in production costs.

Diamonds

NEW DIAMOND DEPOSIT DISCOVERED IN FAR NORTH -- Moscow, Trud, 10 Apr 60

A deposit of Kimberlite diamonds has been discovered not far from the source of the Daldyn River, almost at the polar circle. Many small deposits nearby are also rich in diamonds.

A concentration mill, electric station, and machine shops have been constructed on the shores of the Daldyn River.

MOISSANITE IN SHAMANOVO ACCOMPANIED BY DIAMOND PARTICLES -- Leningradskaya Pravda, 8 Apr 60

Moissanite has been discovered in the vicinity of Shamanovo, a village located on the left tributary of the Angara River, south of Bratsk. The mineral approaches the hardness of diamonds and is often found in proximity to Kimberlite bodies.

Its discovery in Shamanovo has great significance, for at the same time large diamond particles were also discovered in the same area.

Mica

MICA PLANT DEVELOPS NEW METHOD OF MICA SPLITTING -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 17 Apr 60

The Nizhneudinsk Mica Plant has developed a new method of splitting mica into thin flakes for use as insulating material. Labor productivity increased by a factor of 20 as a result of using the new method and production costs decreased markedly. Since the beginning of 1960, the plant has saved almost 500,000 rubles.

Ore Discovery

NEW ORE BODY DISCOVERED IN ZYRYANOVSK -- Alma-Ata, Kazakhstanskaya Pravda, 30 Apr 60

A new ore body was recently discovered at the Zyryanovsk /Polymetals/ Mine and deliveries of valuable metallurgical raw material have already been made to the Zyryanovsk Concentration Mill.

Hydromechanical installations now being completed at the mine will expedite overburden removal and will increase the recovery of polymetallic ores by open-pit mining.

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